

5774

U. S. COAST & GEODETIC SURVEY  
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Ed. June, 1928

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton, Director

State: California

DESCRIPTIVE REPORT

~~Hydrographic~~ } Sheet No. 54  
Hydrographic }

LOCALITY

Offshore

~~Southern~~ California Coast

Point San Luis to Morro Rock

1934

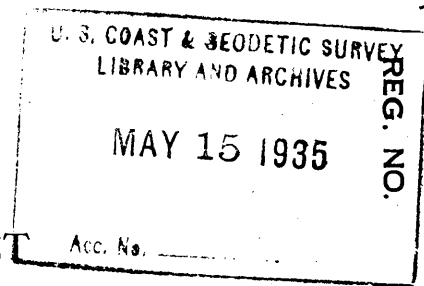
CHIEF OF PARTY

O. W. Swainson, H. & G. Engineer.

U. S. GOVERNMENT PRINTING OFFICE: 1923

✓18703 Applied

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY



HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 54

REGISTER NO. 5774

State California

General locality Offshore  
Southern California Coast

Locality Point San Luis to Morro Rock  
Vicinity Point Buchan

Scale 1:40,000 Date of survey Oct. 25 to Nov. 15, 1934

Vessel U.S.C. & G.S.S. PIONEER.

Chief of Party O. W. Swainson,

Surveyed by O. W. Swainson, J. M. Smook

Protracted by H. J. Pulskamp, Draftsman

Soundings penciled by P. M. Scott, Draftsman

Soundings in fathoms feet

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by

Inked by H. V. Bennett

Verified by W. L. Muller

Instructions dated November 18, 1932, (Project No. 120) 19

Remarks:

## DESCRIPTIVE REPORT

TO ACCOMPANY SHEET FIELD NO. 54.

### AUTHORITY

This survey was undertaken in pursuance of the Director's Instructions dated November 18, 1932, for Project No. 120, to the Commanding Officer of the U.S.C. & G.S.S. PIONEER.

### LOCALITY

The area surveyed embraces approximately 75 square statute miles along the coast of Southern California between Port San Luis and Morro Rock. It joins the R. A. R. work of the Str. GUIDE of 1933, and the visual work of the same vessel accomplished in 1934. It is joined by sheets Nos. 46, 110, 111, 112, and 123, of the PIONEER.

### CONTROL

All the work on this sheet was controlled by visual fixes on triangulation and topographic stations. The triangulation stations were established in 1932 and 1933 by Lieutenant Charles Pierce. Topographic stations were located by parties operating with this vessel (See Topographic sheets Field Nos. M, N, O, P, and Q.)

### SURVEY METHODS

The hydrography on this sheet was done by the PIONEER, using the fathometer as sounding apparatus. A number of stops were made for the purpose of obtaining comparisons between the fathometer and wire and for temperatures and bottom characteristics.

### COMPARISON WITH ADJOINING SHEETS

This survey joins contemporary work of the GUIDE very satisfactorily. Also it is in excellent agreement with sheets Field Nos. 110, 111, 112, and 46. The agreement with sheet Field No. 123 is fair. Where discrepancy occurs between this sheet and sheet No. 123, the former should be given preference on account of the control being visual. Sheet No. 123 is controlled by R. A. R. entirely.

### COMPARISON WITH PREVIOUS SURVEYS

This survey is in very good agreement with H-1606 a and H-1606 b. Beyond the offshore limits of these surveys no previous data was furnished. However comparison of the new survey with Chart No. 5302 shows good agreement. Bottom characteristics obtained by the new survey should be supplemented by the old work.

DANGERS

There are no dangers within the limits of this sheet.

DISCREPANCIES

No discrepancies of particular consequence are noted.

FATHOMETER CORRECTIONS

A table of fathometer corrections is attached to this report.


No slope corrections were necessary.

respectfully submitted:



G. M. Marchand,  
Jr. H. & G. Engr.,  
U. S. Coast & Geodetic Survey.

Examined and approved:



O. W. Swainson,  
H. & G. Engineer,  
Chief of Party,  
Commanding PIONEER.

CHIEF OF PARTY'S REPORT OF INSPECTION OF RECORDS  
AND SHEET.

Lieutenant G. M. Marchand examined the records and sheet very carefully. He went through the records and inspected the boat sheet to see that all hydrographic features mentioned in the records were plotted on the smooth sheet. The smooth sheet plotting was checked by placing the cover sheet over the boat sheet and replotting the questionable positions.

This sheet was protracted by H. J. Pulskamp, draftsman, and the soundings penciled by P. M. Scott, draftsman.

Lieutenant Marchand called my attention to points of doubt or discrepancy for action. He also wrote the descriptive report.



O. W. Swainson,  
H. & G. Engineer,  
Chief of Party,  
Commanding PIONEER.

# STATISTICS

Sheet No. 54.

Day	Vol.	No. Soundings	No. Positions	St. Miles Sndg. Lines
A	1	260	64	45.0
B	1	444	101	70.4
C	1	688	92	62.8
D	1-2	668	100	65.5
E	2	77	11	6.5
F	2	432	62	40.0
G	2	766	122	76.6
H	2	58	10	2.2
Totals		3393	562	369.0

To be sent  
with Des. report

## FATHOMETER CORRECTIONS

Sheet No. 54.

These fathometer corrections were computed in the same way as for sheet No. 48, with the difference that the theoretical corrections were plotted as a function of the actual depth instead of the theoretical fathometer reading. In computing the index correction, the correction was taken from the graph to correspond with the vertical cast depth.

Table 1 shows the computation of the Average Velocity from the depth of the hydrophones and oscillators to various depths. The temperatures and salinities were taken from the accompanying graphs. The temperatures were taken in the area covered by the sheet while the salinities were obtained at various places along the southern California coast. It has been found that there is little variation in the salinity at a given depth in either space or time along this coast.

Table 2 shows the Abstract of Vertical Cast Comparisons with the computation of the index correction I. C. No dependence of I. C. on depth is observed.

Tables 3 show the computation of the theoretical corrections from the theoretical velocities and the distance traveled by the sound from oscillator to hydrophone and also the computation of the final corrections from the theoretical corrections and the index correction. The theoretical and final corrections are plotted on accompanying graphs.

The table of final fathometer corrections is taken from the graph of the same.

Comparisons showed that FRx6 soundings are on the average  $2\frac{1}{2}$  fathoms deeper than FRSD soundings with the #1 hydrophone-small oscillator combination. The FRx6 corrections were taken from the #1 hydrophone-small oscillator FRSD curve, subtracting  $2\frac{1}{2}$  fathoms from the FRSD corrections.

The fathometer scale is uniform over the entire range.

## COMPUTATION OF AVERAGE VELOCITY

FROM DEPTH OF 2 FATHOMS TO VARIOUS DEPTHS

Table 1.

Sheet Field No. 54.

Str. PIONEER, 1934.

1	2	3	4	5	6	7	8
Temp. °C	Salin- ity ‰	Base Velocity BA Tables m/sec	Pres. Cor'n BA Tables m/sec	Salin. Cor'n BA Tables m/sec	Vel. at Depth in Col. 8 m/sec	Av. Vel. to depth in Col 8 m/sec	DEPTH (Fms)
14.3	33.5	1501.4	+0.1	-1.4	1500.1		2
14.1	33.5	1500.7	+0.2	-1.4	1499.5	1500	7
13.8	33.5	1499.7	0.4	-1.4	1498.7	1499	12
11.9	33.5	1493.3	0.5	-1.4	1492.4	1498	17
11.3	33.5	1491.2	0.7	-1.4	1490.5	1496	22
10.7	33.6	1489.0	1.1	-1.4	1488.7	1494	32
10.4	33.7	1487.9	1.4	-1.3	1488.0	1493	42
10.1	33.8	1486.8	1.7	-1.1	1487.4	1492	52
9.9	33.9	1486.1	2.1	-1.0	1487.2	1491	62
9.5	34.0	1484.6	2.7	-0.9	1486.4	1490	82
9.1	34.1	1483.2	3.3	-0.8	1485.7	1490	102
8.9	34.1	1482.4	4.0	-0.8	1485.6	1489	122
8.4	34.2	1480.5	5.0	-0.6	1484.9	1488	152
7.8	34.2	1478.2	6.6	-0.6	1484.2	1487	202
7.1	34.2	1475.5	8.3	-0.6	1483.2	1486	252
6.5	34.3	1473.1	9.9	-0.5	1482.5	1486	302



# ABSTRACT OF VERTICAL CASTS

## AND COMPUTATION OF INDEX CORRECTIONS.

Table 2.

Sheet Field No. 54.

Str. PIONEER, 1934.

DATE 1934	Pos & Day	Vert Cast	Fath. Rdg.	Theo. Cor'n	Fath.Rd +Th.Crn	IC	Fath. Rdg.	Theo. Cor'n	Fth.Rd. +Th.Crn.	I.C.
			#3 Big F R S D				#1 Big F R S D			
10/25	46A	98.5					97.5	+0.6	98.1	+0.4
10/26	39B	61.3	60.2	+0.7	60.9	+0.4				
11/7	1C	27.1	25.5	+0.5	26.0	+1.1	24.5	+1.1	25.6	+1.5R
		26.8					25.0	+1.1	26.1	+0.7
		27.0					25.2	+1.1	26.3	+0.7
		27.2	26.3	+0.5	26.8	+0.4	25.2	+1.1	26.3	+0.9
	75C	27.5	26.5	+0.5	27.0	+0.5	25.4	+1.1	26.5	+1.0
		56.9					55.2	+1.0	56.2	+0.7
		57.0					55.2	+1.0	56.2	+0.8
	--C	62.9					61.2	+1.0	62.2	+0.7
		62.7					60.7	+1.0	61.7	+1.0
		61.8	59.9	+0.7	60.6	+1.2	59.5	+1.0	60.5	+1.3R
11/9	63D	61.9	61.8	+0.7	62.5	-0.6	60.8	+1.0	61.8	+0.1R
		62.2	61.6	+0.7	62.3	+0.1	60.7	+0.1	61.7	+0.5
		62.1	61.5	+0.7	62.2	+0.1	60.5	+1.0	61.5	+0.6
11/14	38F	42.6	41.7	+0.8	42.5	-0.1	41.0	+1.2	42.2	+0.4R
		42.3	41.6	+0.8	42.4	+0.1	40.9	+1.2	42.1	+0.2R
		42.5	41.5	+0.8	42.3	-0.2	40.9	+1.2	42.1	+0.4R
	--F	89.8					89.0	+0.7	89.7	+0.1R
			Average I.C. = +0.72				Average I. C. = +0.73			
Note: Comparisons after 11/7/34 not used as the I.C. apparently changed and #3 Big was not used on this sheet after 10/26/34.										
			#1 Small F R S D							
10/25	46A	98.5	97.5	+0.7	98.2	+0.3				
10/26	39B	61.3	59.8	+1.2	61.0	+0.3				
11/7	75C	56.9	56.2	+1.3	57.5	-0.6				
	--C	62.9	61.7	+1.2	62.9	0				
		62.7	60.9	+1.3	62.2	+0.5				
11/14	--F	89.8	89.0	+0.8	89.8	0				
			Average Index Cor'n = +0.1							

COMPUTATION OF THEORETICAL  
AND FINAL CORRECTIONS

Sheet Field No. 54

Str. PIONEER, 1934

No. 1 Hydrophone, Small Oscillator, 26 Ft. Base Line.

I. C. = + 0.1

1	2	3	4	5	6
DEPTH (Fms)	V = Av.Theo. Vel. to De- pth in Col.1 m/sec	$\frac{1}{2}$ Dist. travld by sound Fms	Theo.Fath. Reading $\frac{1509}{V} \times \text{Col.3}$	Theoretical Correction Col. 1 - Col. 4.	Final Cor'n. Col. 5 + Index Cor'n.
22	1496	20.12	20.29	+1.71	+1.8
32	1494	30.08	30.38	1.62	1.7
42	1493	40.06	40.49	1.51	1.6
52	1492	50.05	50.62	1.38	1.5
62	1491	60.04	60.76	1.24	1.3
82	1490	80.03	81.05	0.95	1.0
102	1490	100.02	101.29	0.71	0.8
122	1489	120.0	121.6	+0.4	+0.5
152	1488	150.0	152.1	-0.1	0
202	1487	200.00	202.9	-0.9	-0.8
252	1486	250.0	253.9	-1.9	-1.8
302	1486	300.0	304.6	-2.6	-2.5

COMPUTATION OF THEORETICAL  
AND FINAL CORRECTIONS

Sheet Field No. 54

Str. PIONEER, 1934.

No. 1 Hydrophone, Big Oscillator, 69 Ft. Base Line

Index Correction = + 0.73

1	2	3	4	5	6
DEPTH (Fms)	V: Av. Theo. Vel. to Dpth in Col. 1 m/sec	$\frac{1}{2}$ Dist. travld by sound (Fms)	Theo. Fath. Reading $\frac{1509}{V} \times \text{Col. 3}$	Theoretical Correction Col. 1-Col. 4	Final Cor'n. Col. 5 + Index Cor'n.
7	1500	7.62	7.66	-0.66	+0.7
12	1499	11.54	11.62	+0.38	+1.11
17	1498	16.06	16.18	0.82	1.55
22	1496	20.81	20.99	1.01	1.74
32	1494	30.55	30.86	1.14	1.87
42	1493	40.41	40.83	1.17	1.90
52	1492	50.33	50.90	1.10	1.83
62	1491	60.27	61.00	1.00	1.73
82	1490	80.20	81.22	0.78	1.51
102	1490	100.17	101.45	0.55	1.28
122	1489	120.1	121.7	+0.3	1.0
152	1488	150.1	152.2	-0.2	+0.5
202	1487	200.1	203.0	-1.0	-0.3
252	1486	250.1	254.0	-2.0	-1.3
302	1486	300.0	304.7	-2.7	-2.0

COMPUTATION OF THEORETICAL  
AND FINAL CORRECTIONS

Sheet Field No. 54

Str. PIONEER, 1934.

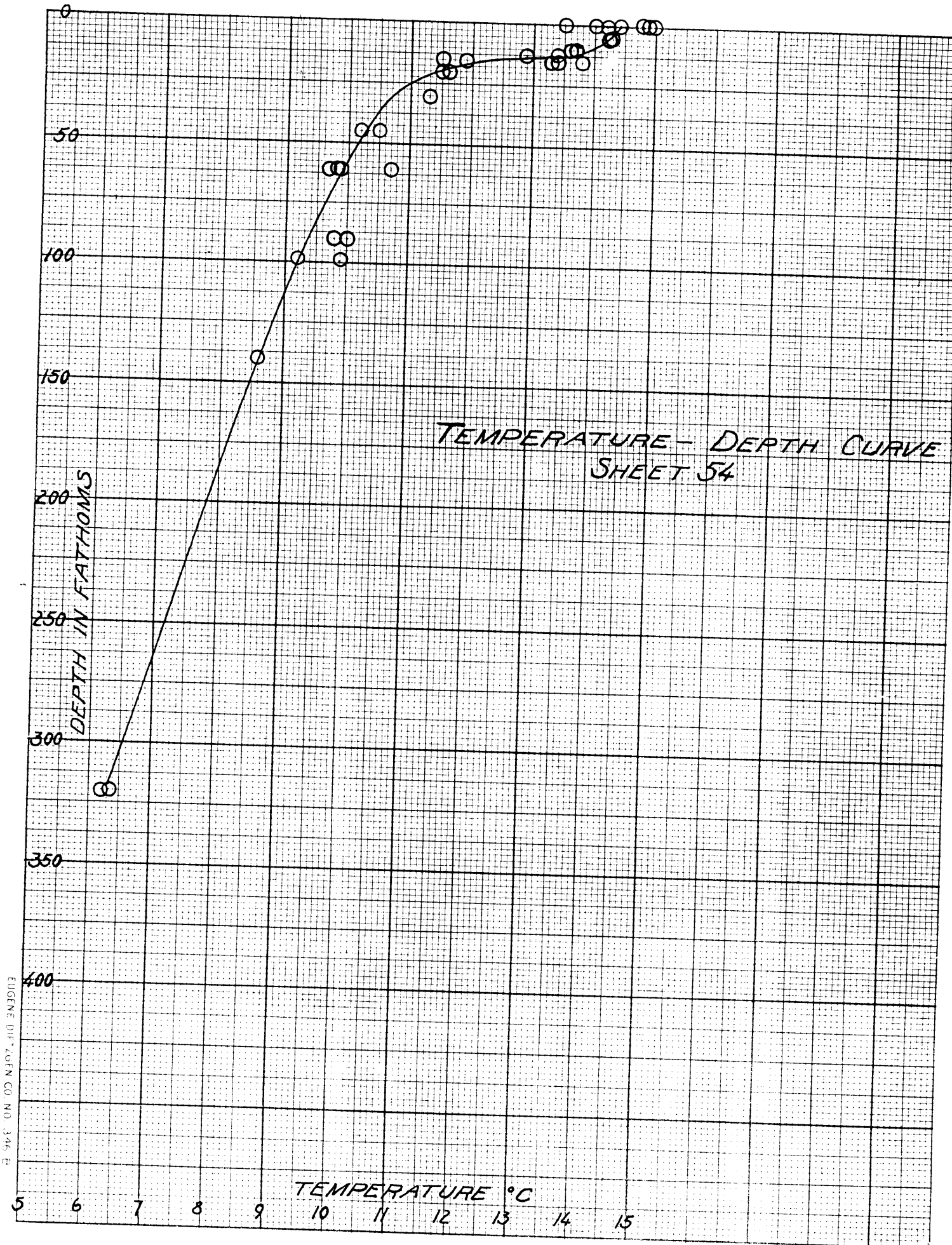
1	2	3	4	5	6
DEPTH (Fms)	V:Av. Theo. Vel. to Dpth in Col. 1 m/sec	$\frac{1}{2}$ Distance traveled by sound (Fms)	Theo.Fath. Reading $\frac{1509}{V} \times \text{Col. 3}$	Theoretical Correction Col. 1 - Col. 4	Final Cor'n. Col. 5 + Index Cor'n.
7	1500	9.434	9.49	-2.49	-1.77
12	1499	12.81	12.90	-0.90	-0.18
17	1498	17.00	17.12	-0.12	+0.60
22	1496	21.55	21.74	+0.26	+0.98
32	1494	31.05	31.36	+0.64	+1.36
42	1493	40.79	41.23	0.77	+1.49
52	1492	50.64	51.21	0.79	+1.51
62	1491	60.53	61.26	0.74	+1.46
82	1490	80.40	81.43	0.57	+1.29
102	1490	100.32	101.60	0.40	+1.12
122	1489	120.3	121.9	+0.1	+0.8
152	1488	150.2	152.3	-0.3	+0.4
202	1487	200.2	203.2	-1.2	-0.5
252	1486	250.1	254.0	-2.0	-1.3
302	1486	300.1	304.7	-2.7	-2.0

# FINAL FATHOMETER CORRECTIONS

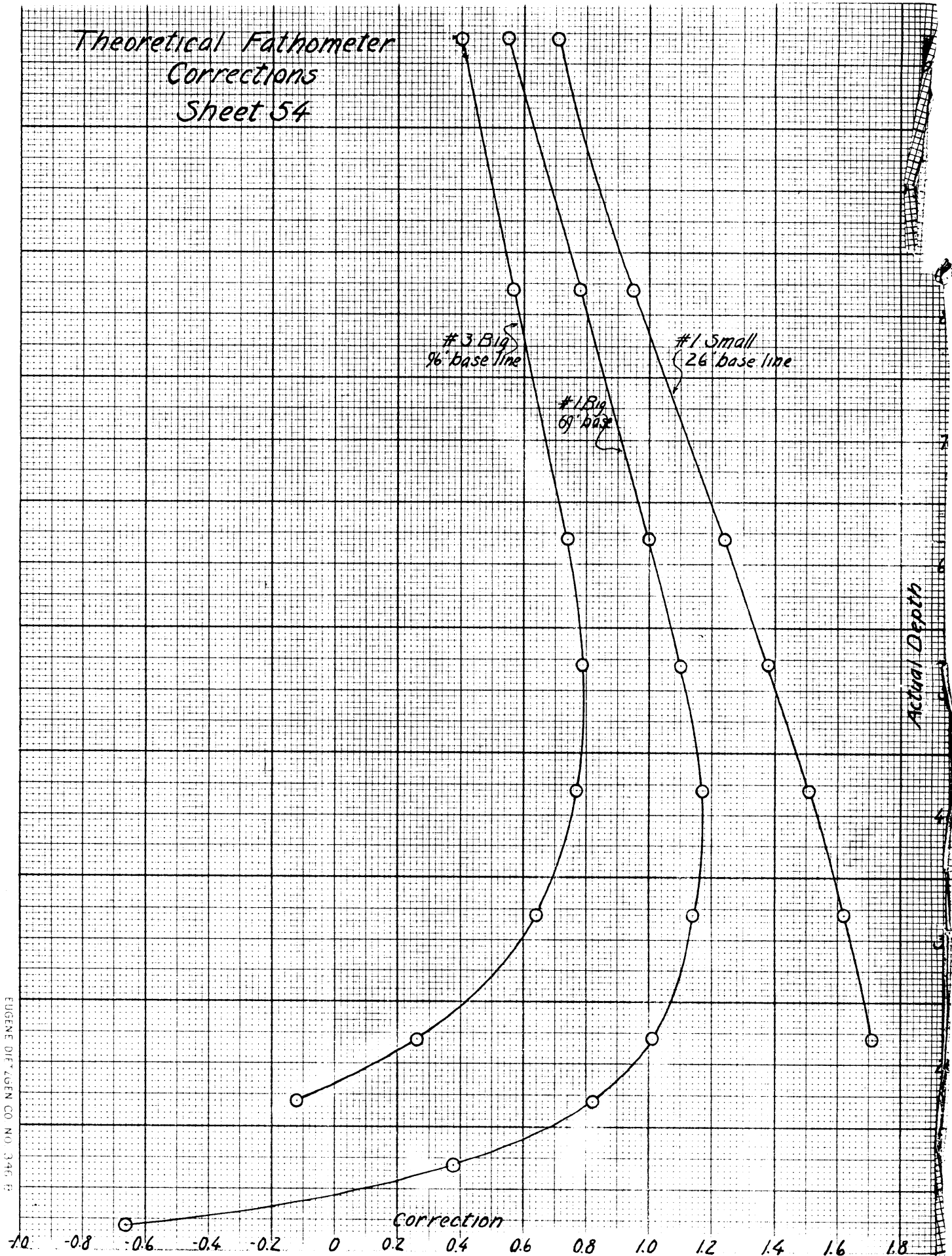
Sheet No. 54.

#3 Big	FRSD	#1 Big	FRSD	#1 Small	FRSD	#1 Small	FRx6
Depth	Cor'n	Depth	Cor'n	Depth	Cor'n	Depth	Cor'n
18-26 $\frac{1}{2}$	+1	12 $\frac{1}{2}$ -20 $\frac{1}{2}$	+1 $\frac{1}{2}$	30-67	+1 $\frac{1}{2}$	100-138	-2
27-85 $\frac{1}{2}$	+1 $\frac{1}{2}$	21-58 $\frac{1}{2}$	+2	68-103	+1	139-201	-3
86-126	+1	59-99 $\frac{1}{2}$	+1 $\frac{1}{2}$	104-167	0	202-255	-4
		100-136	+1	168-228	-1	256-310	-5
		137-198	0	229-286	-2		

# TEMPERATURE - DEPTH CURVE SHEET 54

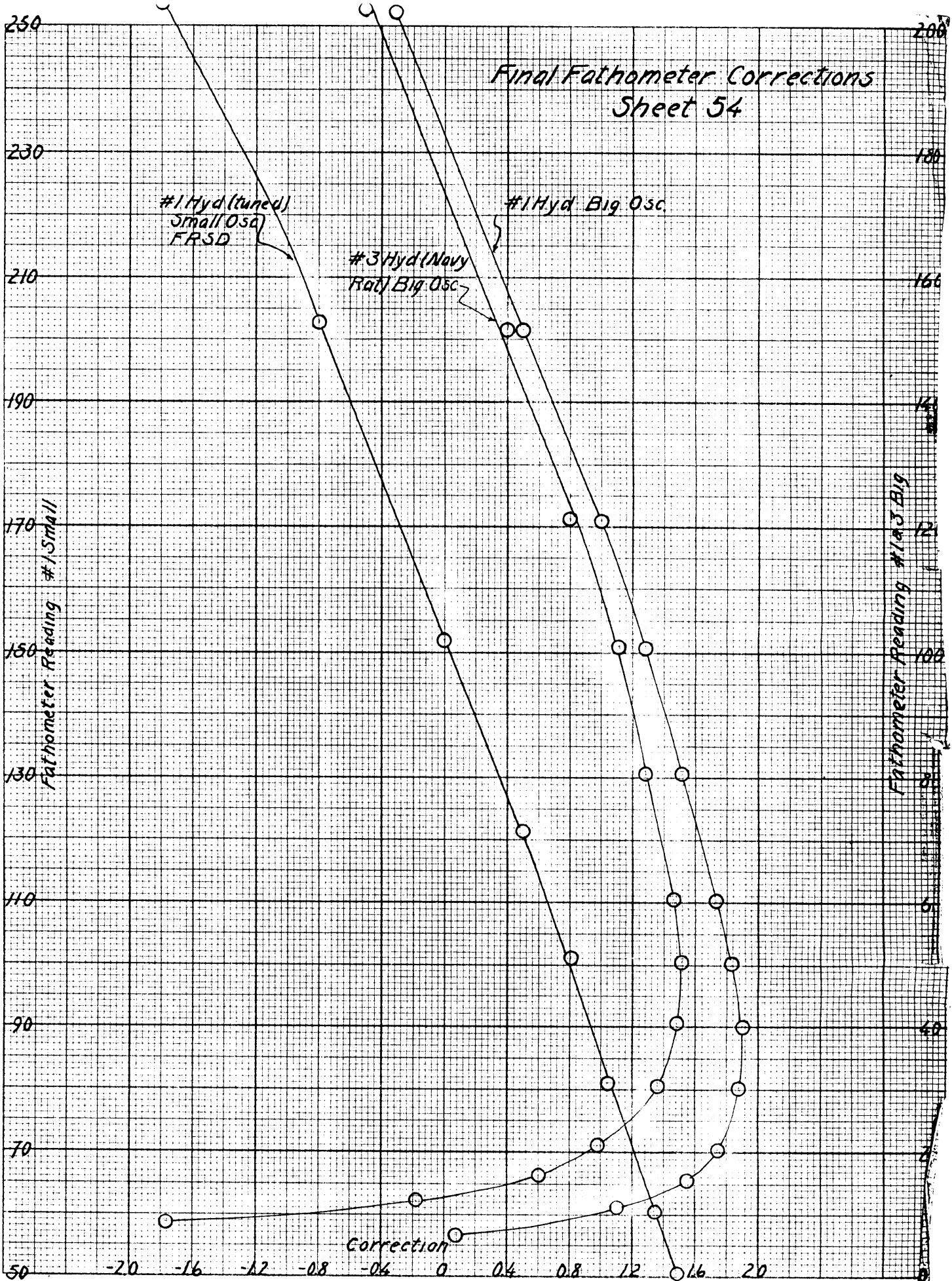


# Theoretical Fathometer Corrections Sheet 54



EUGENE DIFF. GEN. CO. NO. 346 B

# Final Fathometer Corrections Sheet 54





# TIDE NOTE FOR HYDROGRAPHIC SHEET

May 28, 1935

Division of Hydrography and Topography:

✓ Division of Charts: Attention Mr. E. P. Ellis

Tide Reducers are approved in  
2 volumes of sounding records for

HYDROGRAPHIC SHEET 5774

Locality Point San Luis to Morro Rock, California

Chief of Party: O. W. Swainson in 1934  
Plane of reference is mean lower low water reading  
2.6 ft. on tide staff at Port San Luis  
14.6 ft. below B.M. 6

Height of mean high water above plane of reference is 4.5 feet.

Condition of records satisfactory except as noted below:

*Paul F. Whitney*

Chief, Division of Tides and Currents.



Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. 5774

The following statistics will be submitted with the  
cartographer's report on the sheet:

Number of positions on sheet	562..
Number of positions checked	47..
Number of positions revised	1..
Number of soundings recorded	339.3
Number of soundings revised	13..
Number of signals erroneously plotted or transferred	None .....

Date: June 8, 1935

Verification by W. L. Mullen

Review by

Miss Bennett (Sailing)  
Geo. Risegari

H. V. Bennett

Time: 18 1/2 hrs.

12 1/2 hrs.

Time:

7 3/4 hrs.

HYDROGRAPHIC SURVEY NO. H5774

Smooth Sheet 1 ✓

Boat Sheet 1 ✓

Sounding Records 2 ✓ Vols. \_\_\_\_\_

Descriptive Report Yes ✓

Title Sheet Yes ✓

List of Signals Yes in Vol. 1 ✓

Landmarks for Charts (Form 567) See Letter 418(1935)

Statistics Yes

Approved by Chief of Party O. W. Swainson

Recoverable Station Cards (Form 524) \_\_\_\_\_

Special Chart for Lighthouse Service \_\_\_\_\_  
(Circular Nov. 30, 1933)

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

1- The records conform to the requirements of the Hydrographic Manual.

2- The usual depth curves can be completely drawn.

3-4 The field plotting was complete, with the following exceptions: (A) Thirteen soundings were pencilled erroneously. (B) No attention was paid by the field draftsman to changes of interval of time between soundings. The total of 56 soundings were changed on this account.

5- The junctions on available sheets are not available at the present time either because they have not come to this office from the field or have not been completed in this office.

6- Triangulation station Pillar Rock was shown on the smooth sheet as Pil and on the boat sheet as Lar and in the records as Lar. This has been changed on the smooth sheet so that all references to this  $\Delta$  are now uniform as  $\Delta$  Lar. The records in volume 2 also refer to this station as Pilar. This name has been added to the smooth sheet. This is also true of  $\Delta$  Valencia. The smooth sheet carried the name Val and the records the name Len. This has also been made uniform. There is a topographic signal on the sheet named Val so the selection of Len is logical.

Triangulation station Roy is incorrectly plotted on the boat sheet, but properly plotted on the

Smooth sheet.

The only junction available (H-5566) has been added to the sheet. All other junctions have either not been received in the office or have not passed through the hands of the reviewers and are therefore not acceptable to apply to this sheet.

Respectfully submitted  
W. L. Muller

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5774 (1934) - FIELD NO. 54

Point San Luis to Morro Rock, Offshore California Coast, California  
Surveyed in 1934

Instructions dated November 18, 1932 (PIONEER)

Fathometer Soundings.

3 Point Fixes on Shore Signals.

Chief of Party - O. W. Swainson.

Surveyed by - O. W. Swainson, J. M. Snook.

Protracted by - H. J. Pulskamp.

Soundings penciled by - P. M. Scott.

Verified and Inked by - W. L. Mullen, H. V. Bennett.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual, except as follows:

- a. Two triangulation signals shown on the smooth sheet as "Pil" and "Val" were recorded in the sounding volumes as "Iar" and "Len", respectively. The names were changed in the records by the verifier to read "Pil" and "Val".
- b. The Descriptive Report is complete and comprehensive and satisfactorily covers all items of importance.

2. Compliance with Instructions for the Project.

The survey complies with the instructions for the project.

3. Sounding Line Crossings.

Such cross lines as were run, as well as the adjacent lines, show good agreement.

4. Depth Curves.

The usual depth curves may be completed and are satisfactory.

5. Junctions with Contemporary Surveys.

Junction with H-5566 (1933) on the north is satisfactory.

Junctions with H-5750 (1934) on the east, H-5748 (1933-34) on the southeast, H-5777 (1933) on the south and southwest, H-5611 (1934) on the west, will be considered in the reviews of those sheets.

6. Comparison with Prior Surveys.

a. H-290 (1851).

This is a reconnaissance survey on a scale of 1:375,000 with soundings of about from 2 to 10 miles apart. This old survey has no particular value for comparison purposes and should not be used for charting.

b. H-1606a (1884), H-1606b (1884).

These surveys, on a scale of 1:10,000, cover the area of the present survey between the 30 and 50 fathom curves, approximately, and the agreement in the depths is in general very good. The present survey covered this area adequately and should take preference over the old surveys for charting purposes, but the latter surveys may be used, if needed, to supplement the present survey. A number of bottom characteristics from H-1606a (1884) have been carried forward to the present survey.

c. H-1607b (1884).

This survey on a scale of 1:10,000, covers a small section at the north limit of the present survey with a few soundings which are in good agreement with the present survey.

The old survey should be superseded by the present adequate survey.

d. H-1747 (1879-80).

This survey on a scale of 1:100,000 overlaps the present survey at the south limit with a very few widely spaced soundings which are in fair agreement. There is nothing of importance on the old survey to be carried forward. The present survey is ample for charting.

e. H-3099 (1910), H-3100 (1910).

These surveys on scales of 1:100,000 and 1:40,000, cover the southwestern portion and a small section at the southern limit of the present survey, respectively, with widely spaced soundings which are in very good agreement.

Since the present survey covered the areas adequately, it should be given preference over the old work for charting purposes.



7. Comparison with Chart No. 5302.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review.

8. Field Plotting.

The protracting of positions and the plotting of soundings was good with the exception that a number of soundings were found incorrectly spaced. These discrepancies were corrected in the office by the verifier.

9. Additional Field Work Recommended.

No additional work is required.

10. Superseding Old Surveys.

Within the area covered, the present survey, with the indicated additions from previous surveys, supersedes the following surveys for charting purposes:

H- 290 (1851) in part.  
H-1607b (1884) " "  
H-1747 (1879-80) in part.  
H-3099 (1910) in part.  
H-3100 (1910) " "

11. Reviewed by - G. Risegari, July 10, 1935.

Inspected by - A. L. Shalowitz.

Examined and approved:

C. K. Green, *C. K. Green.*  
Chief, Section of Field Records.

*L. O. Dolbert.*  
Chief, Division of Charts.

*J. B. Borden*  
Chief, Section of Field Work.

*G. Thude*  
Chief, Division of H. & T.

*Applied to drawing of Chart 5302 - Mar. 20, 1936 - J.F.W.*  
*Applied to Compilation of Chart 5386 - Aug. 1936 - H.B.*  
*" " " " 5387 Jun 1937 J.G.L.*

25 Jan. 7, 1936  
EAD

H-5774 Applied to CHART EXTENSION (18703)  
35° 09' To 35° 05'

8-11-80  
Q Diamond  
8-28-80 RLS